



Long-Term Prospects and College Students' Academic Performance

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Abstract

Self-referent performance beliefs can influence people's decision making related to long-term goals. Current measures of such beliefs, however, do not explicitly focus on the long-term aspects of goal achievement. We introduce a new concept, Long-Term Prospects (LTP), which is defined as the self-perception that one can maintain the continuous effort needed to achieve long-term goals. We developed a measure of LTP and demonstrated across three studies ($n > 1,900$) that college students' LTP predicted their academic performance, as defined by self-reported grade point average (GPA) and official GPA. Moreover, LTP predicted GPA better than commonly used measures of grit, conscientiousness, and academic self-concept. Multiple regression and Bayesian results showed that LTP accounted for unique variance in the prediction of college GPA above and beyond intelligence, prior achievement, and demographics. Tests for moderation effects suggested that students who had low high school achievement or a low need for achievement especially benefited from having strong beliefs about their ability to maintain effort over the long term. These studies suggest that self-referent beliefs about one's ability to maintain the effort needed to achieve long-term goals are important for academic success and that the LTP measure captures individual differences in these beliefs. The implication is that cultivating students' belief that they can maintain long-term effort, especially in low-achieving students, may yield positive outcomes in their academic performance.

Keywords

achievement, belief, long-term goal, future, Long-Term Prospects

It is well established that cognitive abilities (e.g., intelligence) predict academic achievement (Geary, 2005), as do aspects of personality (e.g., Barrick & Mount, 1991) and self-referent performance beliefs (e.g., Bandura, 1986; Greven, Harlaar, Kovas, Chamorro-Premuzic, & Plomin, 2009). The latter are thought to influence the motivational and affective processes that guide people's decision making, engagement, and coping in the different stages of goal pursuit. However, most measures of performance beliefs focus on particular tasks or short-term

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objectives and do not explicitly focus on the long-term aspects of goal achievement, that is, people's self-perceived ability to maintain effort in the pursuit of long-term goals. We propose that people differ in their explicit beliefs about their ability to maintain effort over the long-term and evaluate this proposal using a new self-report measure, Long-Term Prospects (LTP). We compared the new construct with prior achievement, cognitive ability, and with existing trait and belief measures in the prediction of academic success in the first year of college.

Cognitive Abilities, Personality Traits, Self-Referent Beliefs, and Achievement

Intelligence and previous academic performance are well-established predictors of later achievement (e.g., Rhode & Thompson, 2007; Robbins et al., 2004), as is the conscientiousness (e.g., being organized, predictable) dimension of the Big Five model of personality (Barrick & Mount, 1991; Poropat, 2009). Individuals' performance beliefs are another aspect of personality related to achievement. Bandura (1986, 1989) proposed that the visualization of future success can result in more persistent goal pursuit and less anxiety when facing obstacles. In educational research, self-referent performance beliefs include "academic self-concept" (i.e., "I am good at learning") and self-efficacy, which focuses primarily on people's perceived ability to carry out specific actions (i.e., complete algebra tasks). Although research results for academic self-efficacy are similar to those for academic self-concept, self-efficacy items are framed somewhat differently; they focus more on future outcomes than on a static, here-and-now or self-evaluation of prior outcomes, and focus more on the perception of ability without a corresponding affective evaluation (Bong & Skaalvik, 2003).

Beliefs About Long-Term Goals

Beliefs about one's ability to maintain goal-related effort over time could significantly contribute to individual differences in success and failure in academic and other contexts. However, as noted, most of the individual difference measures of academic beliefs are focused on short-term outcomes, or at least are not explicitly focused on long-term goals. In response, Duckworth, Peterson, Matthews, and Kelly (2007) developed a trait construct they called "grit," which refers to passion and perseverance for long-term goals. They found that grit was associated with educational success, such as grade point average (GPA), retention, and educational attainment (Duckworth et al., 2007). Grit was related to self-reported college GPA ($r = .25$, Study 3) and official GPA ($r = .06$, Study 4).

Although the stated definition of grit emphasizes persistent effort and long-term goals, most of the items do not explicitly focus on goal-oriented behaviors in a long-term context. For example, a sample item in grit's "Consistency of Interest subscale" is "I often set a goal but later choose to pursue a different one" (reversed), and a sample item in the "Perseverance of Effort subscale" is "I am a hard worker." It is unclear whether those behaviors are explicitly eliciting self-referent evaluations as related to long-term goals. In the 12-item full Grit Scale, only two items explicitly ask about people's experience in pursuing tasks or goals that take long periods of time to complete. In the Short Grit Scale (Grit-S; Duckworth & Quinn, 2009), only one item, "I have difficulty maintaining my focus on projects that take more than a few months to complete," is focused on the long-term context. Moreover, a recent study suggested that grit does not uniquely predict college students' grades, and the estimates were negative when some similar constructs, such as conscientiousness, were included as simultaneous predictors (Muenks, Wigfield, Yang, & O'Neal, 2017).

Note that grit was conceptualized as a personality trait: "Grit entails working strenuously toward challenges, maintaining effort and interest over years despite failure, adversity, and

plateaus in progress" (Duckworth et al., 2007, p. 1087). Individuals' behavioral patterns can be useful in predicting one's future behavior and later achievement. But, as proposed by Bandura (1986), beliefs in one's capabilities to carry out goal-relevant actions may serve as better predictors of later behavior than evaluations of past behaviors. Individuals' future time perspective, or the anticipation of future goals, is also associated with their learning behaviors and outcomes (de Bilde, Vansteenkiste, & Lens, 2011; Husman & Lens, 1999). For this reason, a scale measuring not only people's long-term orientations but also their beliefs about their future behaviors might better predict achievement of long-term goals than currently used measures.

Self-referent beliefs may be particularly important for low-achieving or disengaged students. For example, Liu, Hsieh, Cho, and Schallert (2006) found that self-efficacy predicted science achievement for students with low interest in and poor attitudes about science, but was unimportant for their more favorably inclined peers. It may be more likely for low achieving or disengaged students to devalue learning, especially if it takes time before obvious progress can be made. For these students, beliefs about their ability to maintain long-term effort may be more important than it is for students who have strong academic backgrounds or have more positive attitudes about learning.

Long-Term Prospects (LTP)

In short, existing measures do not explicitly evaluate people's general beliefs about their ability to maintain long-term effortful behaviors related to goal attainment, despite the consensus that such beliefs are important (Bandura, 1989; Duckworth et al., 2007). To better capture these beliefs, we developed a new construct of efficacy beliefs with respect to long-term goals. Following Worthington and Whittaker (2006) and DeVellis (2003), we first defined *LTP* as the belief that one can succeed in achieving long-term goals that require continuous effort. Based on this definition and using scales of similar constructs (e.g., academic self-concept, grit) as a reference, we drafted six items that fit the proposed construct. The first component of the items is a reference to long-term goals or goals that take continuous effort, and the second is future-oriented wording focused on the perceived ability to achieve such goals, such as "I can," "I am able to," and "I have doubts" (reverse scored).

The first five items included both components of the definition, and the last item was a direct statement about one's belief of their capacity to persevere. Three of the items were reversed. These items were then revised by experts with regard to face validity and wording accuracy. Pilot items were administered to 30 undergraduates, with additional items from the Grit-S (Duckworth & Quinn, 2009) and scale of academic self-concept (Marsh & O'Neill, 1984) to test for convergent validity. Items were rated on a 7-point Likert-type scale on which 1 indicated *strongly disagree*, and 7 indicated *strongly agree*. At the end of this process, we dropped the last item because it did not represent the concept of LTP well, and some students did not understand the word "perseverance."

The final LTP scale (see Table 1) consisted of five items that included both components of the definition. The alpha of the scale was .75; the correlations between LTP and grit and academic self-concept were .53 and .59, respectively. We changed to a 5-point scale for the final version because respondents were unable to differentiate the 7-point scale. Given the small sample size of the pilot, we were not able to perform robust tests to examine the predictive validity and discriminant validity of the LTP scale, but we examined them in the current studies.

Current Research

Our primary goal was to examine the relation between college students' LTP and their academic performance, comparing it with other trait or belief measures. We hypothesized that LTP would

Table 1. Exploratory Factor Analysis of Long-Term Prospects Scale With Promax Rotation.

Item	Factor loading	Item total correlation	Communality
1. I can achieve a goal that takes years of hard work.	0.70	.50	0.48
2. I always have doubts about my ability to achieve long-term goals. (reversed)	0.65	.45	0.42
3. I am able to finish whatever I started, even if it takes a long time.	0.66	.46	0.44
4. I will give up a valuable goal if it needs continuous effort. (reversed)	0.69	.48	0.47
5. It is hard for me to stay focused on long-term goals. (reversed)	0.78	.59	0.61

Table 2. Study 1 Multiple Regression Model Predicting GPA.

Variables	Estimate	SE	p
Intercept	-0.22	0.09	.0222
Sex (female)	0.31	0.05	<.0001
Race (non-White)	-0.25	0.07	.0004
Major (agriculture, food, and natural resources)	0.23	0.14	.1121
Major (business)	0.22	0.10	.0359
Major (education)	0.28	0.13	.0367
Major (engineering)	0.28	0.12	.0170
Major (fine arts)	-0.16	0.23	.4822
Major (health-related professions)	0.37	0.10	.0002
Major (journalism, peace studies, and languages)	0.22	0.11	.0561
Major (physical sciences)	0.46	0.12	.0001
Major (social sciences)	0.06	0.12	.6352
Year at school (sophomore)	-0.93	0.06	<.0001
Year at school (junior or above)	-0.98	0.02	<.0001
ACT	0.19	0.02	<.0001
LTP	0.20	0.02	<.0001
R ²		28.40%	

Note. GPA = grade point average; ACT = American College Test; LTP = Long-Term Prospects.

be a unique predictor of college students' academic performance above and beyond either global or academic self-concept, grit, or conscientiousness. People's self-referent goal-oriented performance beliefs, particularly concerning long-term future performance, should explain unique variance in the prediction of long-term behaviors (e.g., academic success in college), if students' explicit beliefs about their ability to maintain goal-relevant effort are important. We tested this prediction for college students' GPAs across three studies. We were also interested whether the predictive utility of LTP varied with individual differences in prior achievement or attitudes toward achievement, specifically, whether LTP was a stronger predictor of college GPA for students with relatively low high school GPAs or with a low need for achievement.

Study 1

We recruited a large number of college students and explored the relation between their LTP, self-reported ACT (formerly, American College Test) and GPA.

Method

Participants. The participants were 1,463 college students (881 women, M age = 18 years, SD = 0.9) attending a large public university and recruited from an introductory psychology course. In all, 88% of the students were White and 4% Hispanic.

Measures and procedure. We randomly divided the overall sample into two subsamples of the same size, one for exploratory factor analysis (EFA) and the other for confirmatory factor analysis (CFA). EFA confirmed the LTP items shown in Table 1 formed a single factor ($\alpha = .73$; eigenvalue = 2.42, 48% variance were explained by this factor). CFA showed that the one-factor model fits very well ($\chi^2 [4] = 5.5$, $p = .24$, root mean square error of approximation [RMSEA] = .02, Bentler-Bonett NFI = .99). Items were rated on a 5-point Likert-type scale on which 1 indicated *strongly disagree*, and 5 indicated *strongly agree*. As part of a larger online survey of psychological attributes, scales were presented randomly. Participants reported their ACT score and current GPA and responded to the LTP scale. They also answered demographic and school background questions, including sex, race, age, major, and year at school.

Results

Bivariate correlations. LTP scores correlated significantly with self-reported college GPA ($r = .22$, $p < .0001$), but not ACT scores ($r = .04$, $p = .0974$). The correlations between LTP and self-reported GPA for freshmen ($n = 1,163$), sophomores ($n = 208$), juniors or above ($n = 92$) were .21, .28, and .36, respectively.

Regression models. First, potentially relevant demographic and school background variables were entered in a regression model to predict GPA. Sex (male as the reference group), race (coded White vs. non-White), year at school (freshmen as the reference group), and major (undecided as the reference group) were significant predictors and thus were entered as covariates, along with ACT and LTP; ACT, LTP, and GPA were standardized. As shown in Table 2, ACT predicted self-reported GPA, $p < .0001$, $\eta_p^2 = .04$, as did LTP, $p < .0001$, $\eta_p^2 = .05$.

Study 2

We collected official academic records and examined the predictive utility of LTP for first-year college academic performance, controlling for high school achievement, intelligence, personality, academic beliefs, and demographic factors. We also tested the hypothesis that LTP is more predictive of college GPA for students with a below average (for the sample) high school GPA than for their more accomplished peers.

Method

Participants. The participants were 320 freshmen (224 women, M age = 18 years, SD = 0.8) who attended the same university as in Study 1 and were recruited from an introductory psychology course. The sample was predominantly White (77%), with 12% Black, 4% Asian, 2% Hispanic, and the remainder unknown. Participants provided informed consent, including authorization to obtain their high school and college academic records from the university registrar. According to university records, this sample had higher ACT scores ($M = 25$, $SD = 3.3$) than the national average ($M = 21$), $t = 23.3$, $p < .01$, but a bit lower than the university average ($M = 26$), $t = -3.79$, $p < .01$.

Measures

Intelligence. Intelligence was assessed using the *Standard Raven's Progressive Matrices* (RPM; Raven, Court, & Raven, 1993) and the ACT. Twenty-four of the most difficult items from the RPM were administered in a timed group setting. ACT scores were obtained from the university registrar. We dropped the first 36 items of the Raven's because of time constraints and because they assessed abilities that were significantly below the average of this sample. Although the ACT was not designed to assess intelligence, it is often used as a proxy for intelligence (Coyle, 2015; Coyle & Pillow, 2008).

Previous achievement. Participants' official high school GPA was obtained through the college registrar.

College achievement. Participants' official college GPAs for the first semester and for the first year were obtained through the college registrar.

LTP. LTP was measured using the same scale as in Study 1 ($\alpha = .75$ for the current sample).

Conscientiousness. This personality trait was measured using the 10-item conscientiousness subscale from the International Personality Item Pool Representation of the NEO PI-R (IPIP; Goldberg et al., 2006). A sample item is "I pay attention to details" ($\alpha = .83$ for the present sample). Items were rated on a 5-point Likert-type scale on which 1 indicated *strongly disagree*, and 5 indicated *strongly agree*.

Grit. Grit was measured by Grit-S (Duckworth & Quinn, 2009). This eight-item scale includes four Consistency of Interest items (e.g., "I often set a goal but later choose to pursue a different one" [R]) and four Perseverance of Effort items (e.g., "I finish whatever I begin," $\alpha = .79$ for the present sample). Items were rated on a 5-point Likert-type scale on which 1 indicated *strongly disagree*, and 5 indicated *strongly agree*.

Academic self-concept. Academic self-concept was measured by the 10-item academic subscale of the *Self-Description Questionnaire III* (SDQIII; Marsh & O'Neill, 1984). A sample item is "I am good at most academic subjects" ($\alpha = .79$ for the present sample). Items were rated on a 5-point Likert-type scale on which 1 indicated *strongly disagree*, and 5 indicated *strongly agree*.

General self-esteem. The 10-item *Rosenberg Self-Esteem Scale* (Rosenberg, 1965) was used to measure student's general self-esteem. A sample item is "On the whole, I am satisfied with myself" ($\alpha = .89$ for the present sample). Items were rated on a 5-point Likert-type scale on which 1 indicated *strongly disagree*, and 5 indicated *strongly agree*.

Demographics. Participants reported sex, family income, and father's and mother's education levels.

Procedure. Freshmen participated at the beginning of their first semester. In groups of 10 to 25, they first completed the Raven's items with a 10-min time limit. Then, participants completed the personality measures. The entire session took about 30 min.

Statistical analyses. First, we used EFA to determine whether the LTP could be differentiated from the other noncognitive constructs. Second, bivariate correlations and multiple regressions were used to examine the basic relations between GPAs and LTP and to examine the incremental validity of LTP. Furthermore, we utilized a Bayes regression approach to model comparisons (Rouder

& Morey, 2012) between LTP and other noncognitive constructs. The approach is more robust than standard regression in the selection of models that contain collinearity between predictors. The associated Bayes factor (set of predictors) is higher when one of two highly correlated variables is included in relation to models containing both or none, providing the ability to compare the relative contribution of the predictors to the outcome measure (as odds ratios). Computations were performed using the regressionBF function in the BayesFactor package for R (Morey, Rouder & Jamil, 2015). See Appendix 1 in the online supplementary materials for more details about the Bayes factor analysis used in the current study.

Results

EFA. We entered the five LTP items and items from each noncognitive construct, one construct at a time, for EFA with promax rotation. For LTP and conscientiousness items, LTP and academic self-concept items, LTP and self-esteem items, and LTP and grit items, three factors were extracted; all LTP items loaded on a single factor, and the items of the other noncognitive constructs loaded across two factors. The results show that LTP items measure a latent construct that is distinct from similar constructs.

Bivariate correlations. As shown in Table 3, first-semester and first-year GPAs were significantly correlated with ACT score, high school GPA, conscientiousness, academic self-concept, and LTP.

Bayes factors. The exploratory analyses compared the fit of all 4,095 possible combinations of the sets of predictors (Rouder & Morey, 2012). The model with largest Bayes factor (BS_{m0} and BY_{m0}) indicates that this combination of variables captures variance in GPA better than the null model and better than alternative combinations of variables. The best models (MS_1 and MY_1) in the prediction of first-semester and first-year GPA included the same set of variables: high school GPA, ACT, father's education, sex, and LTP.

GPA. As shown in Tables 4 and 5, BS_{m1} compared the Bayes factor of other models with that of MS_1 , and BS_{m2} compared the Bayes factor of the other models with that of MS_2 , when predicting first-semester GPA (Table 4) and first-year GPA (Table 5). The BS_{12} indicated the data were 562 times and 16 times more likely with LTP than without it, when predicting first-semester GPA and first-year GPA, respectively, providing very strong evidence for its predictive utility (Raftery, 1995). Models MS_3 to MS_6 involved the systematic replacement of LTP with each of the other noncognitive predictors and evaluation of these models against the model with LTP (MS_1) or the model without LTP (MS_2). The associated Bayes factors revealed that the data were 27 to 1,668 times and 10 to 83 times more likely with LTP than with any alternative noncognitive predictor, when predicting first-semester and first-year GPA, respectively.

Regression models. Multiple regression models with all the potential predictors (the full model) and with only best predictors identified by the Bayes factors (the modified model) are shown in Table 6. Boys had lower average GPAs than girls. High school GPA and ACT predicted both first-semester and first-year GPA. The modified model also showed that students whose father had graduated from college had higher GPAs than other students. Conscientiousness significantly predicted first-semester GPA, but the effect was insignificant for first-year GPA. LTP emerged as the only significant noncognitive predictor for both first-semester and first-year GPA. Overall, LTP was about as important as ACT in predicting college GPA.

An interaction term of high school GPA and LTP was added to the full model predicting first-year GPA to test whether high school GPA moderated the effect of LTP. As shown in Table 6,

Table 3. Descriptive Statistics of Noncognitive Measures and Cognitive Measures in Study 2.

	M	SD	2	3	4	5	6	7	8	9	10
1. Long-Term Prospects	3.74	0.61	.39***	.49***	.54***	.62***	.03	-.01	.08	.17**	.15***
2. Academic self-concept	3.41	0.64	.34***	.34***	.41***	.35***	.09	.17***	.06	.11*	.09
3. Self-esteem	3.92	0.64			.43***	.48***	-.07	.00	.04	.07	.05
4. Conscientiousness	3.68	0.56				.60***	-.05	-.06	.15***	.17***	.15*
5. Grit	3.32	0.59					-.07	-.07	.05	.09	.10
6. Raven's	17.14	3.52						.30***	.00	.07	.05
7. ACT	25.22	3.27							.18**	.27***	.29***
8. HSGPA	3.35	0.53								.32***	.38***
9. First-term achievement	3.17	0.64									.88***
10. First-year achievement	3.20	0.58									

Note. ACT = American College Test; HSGPA = high school GPA.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4. Comparing Model With Long-Term Prospects to Models With Other Factors When Predicting First-Semester GPA in Study 2.

Model	BS_{m0}	BS_{m1}	BS_{m2}
MS ₁ HSGPA + Fedu + Sex + ACT + Long-Term Prospects	5.22×10^{14}		561.976
MS ₂ HSGPA + Fedu + Sex + ACT	9.28×10^{11}	0.002	
MS ₃ HSGPA + Fedu + Sex + ACT + Academic Self-Concept	3.13×10^{11}	<0.001	0.377
MS ₄ HSGPA + Fedu + Sex + ACT + Conscientiousness	1.91×10^{13}	0.037	20.75
MS ₅ HSGPA + Fedu + Sex + ACT + Self-Esteem	6.08×10^{11}	0.001	0.655
MS ₆ HSGPA + Fedu + Sex + ACT + Grit	9.06×10^{11}	0.002	0.976

Note. Fedu represents father education level. GPA = grade point average; HSGPA = high school GPA; ACT = American College Test.

Table 5. Comparing Model With Long-Term Prospects to Models With Other Factors When Predicting First-Year GPA in Study 2.

Model	BY_{m0}	BY_{m1}	BY_{m2}
MY ₁ HSGPA + Fedu + Sex + ACT + Long-Term Prospects	2.93×10^{14}		16.102
MY ₂ HSGPA + Fedu + Sex + ACT	1.82×10^{13}	0.062	
MY ₃ HSGPA + Fedu + Sex + ACT + Academic Self-Concept	3.58×10^{12}	0.012	0.197
MY ₄ HSGPA + Fedu + Sex + ACT + Conscientiousness	3.02×10^{13}	0.103	1.661
MY ₅ HSGPA + Fedu + Sex + ACT + Self-Esteem	7.12×10^{12}	0.024	0.391
MY ₆ HSGPA + Fedu + Sex + ACT + Grit	1.14×10^{13}	0.039	0.625

Note. Fedu represents father education level. GPA = grade point average; HSGPA = high school GPA; ACT = American College Test.

there was a significant interaction ($p = .0285$). Simple slope test (Aiken & West, 1991) results showed that LTP was positively associated with first-year GPA for students whose high school GPA was one standard deviation below the mean ($t = 3.27, p = .0012$), whereas the association was not significant for students whose high school GPA was one standard deviation above the mean ($t = 0.56, p = .5793$).

Study 3

To follow up the interaction between LTP and high school GPA, we tested the potential compensatory effects of LTP for students who have a low need for achievement. The latter refers to a motive or inner concern for achievement and is correlated with grades (Spangler, 1992). We tested whether strong LTP would compensate for low need for achievement in terms of predicting college grades.

Table 6. Multiple Regression Models in Study 2.

Variables	First-semester GPA						First-year GPA					
	Full model			Modified model			Full model			Modified model		
	Estimate	SE	η^2_p	Estimate	SE	η^2_p	Estimate	SE	η^2_p	Estimate	SE	η^2_p
Intercept	2.86***	.08	2.89***	.05	2.91***	.08	2.97***	.07	3.12***	.07		
Sex (boys)	-0.24***	.06	.04	-0.23***	.06	.04	-0.21***	.06	.03	-0.20***	.06	.03
Mother education	0.10	.06	.03	0.15***	.06	.05	0.09	.07	.04	0.14*	.07	.05
Father education	0.10	.07	.04	0.15***	.06	.05	0.09	.07	.04	0.14*	.07	.05
Income	0.09	.06	.01									
Raven's	0.04	.03	.02									
ACT	0.12***	.03	.07	0.12***	.04	.08	0.11***	.03	.07	0.11***	.04	.07
HSGPA	0.14***	.03	.10	0.15***	.03	.09	0.19***	.03	.15	0.19***	.03	.14
LTP	0.13***	.04	.05	0.12***	.03	.05	0.10*	.04	.03	0.09***	.03	.03
ASC	-0.02	.03	.00				-0.03	.03	.00			
Self-esteem	0.01	.04	.00				-0.01	.04	.00			
Conscientiousness	0.08*	.04	.01				0.05	.04	.00			
Grit	-0.06	.04	.01				-0.03	.04	.00			
LTP × HSGPA												
R ²	28.27%			26.19%			27.94%			26.40%		
												29.18%

Note. GPA = grade point average; ACT = American College Test; HSGPA = high school GPA; LTP = Long-Term Prospects; ASC = academic self-concept.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Method

Participants. The sample consisted of 134 college students (71 women, M age = 18 years, $SD = 0.7$) who attended the university as in the other studies and were recruited from an introductory psychology course.

Measures and procedure. LTP was measured using the same scale as in the other studies. The ultra-short scale of achievement motive in the Unified Motive Scales (Schönbrodt & Gerstenberg, 2012) was used to measure students' need for achievement. This scale includes three items that are originally from the Personal Values Questionnaire (PVQ; McClelland, 1991). A sample item was "I try to maintain high standards for the quality of my work." The measures of LTP and need for achievement had acceptable reliability ($\alpha = .72$ and $.82$, for the current sample). Participants filled out an online survey about their current semester GPA on an A to F scale.

Results

All correlations were significant: LTP with self-reported GPA ($r = .20, p < .0219$), need for achievement with self-reported GPA ($r = .33, p < .0001$), and need for achievement with LTP ($r = .40, p < .0001$).

We standardized all the measures and then entered LTP, need for achievement, and their interaction in a regression model to predict GPA. There was a significant interaction ($p = .0015$). Simple slope test (Aiken & West, 1991) showed that LTP was positively associated with self-reported GPA for students whose rating on need for achievement was one standard deviation below the mean ($t = 3.00, p = .0033$), and not significant for students whose rating was one standard deviation above the mean ($t = -1.41, p = .1612$).

Discussion

The importance of self-referent performance beliefs in the prediction of academic and other life outcomes is well recognized (e.g., Bandura, 1997; Marsh & Craven, 1997). We show that students' explicit beliefs about their ability to maintain the effort needed to achieve long-term goals contribute to academic performance in college. We also show that our simple, five-item measure of LTP predicts self-reported and actual college GPAs, above and beyond the influence of intelligence, prior academic achievement, and demographic factors, and is a better predictor of GPA than other measures of traits or beliefs, specifically, conscientiousness, grit, academic self-concept, and self-esteem.

The results of Studies 2 and 3 indicated that LTP was more predictive of low achieving or disengaged students' GPA than that of their better prepared or more engaged peers. In fact, LTP was not significantly associated with GPA for high achievers or for students who reported high need for achievement. The pattern suggests that it is easier for students with a strong high school academic foundation to maintain a reasonable college GPA than for students with a weaker academic foundation (Tucker-Drob, 2009). Students with high LTP may be more motivated to complete academic challenges, even if they experience low interest in academic subjects, and may eventually compensate for their poor academic foundation. Also, students who value achievement highly perform well in college courses, independent of their LTP.

Bandura (1989) suggested that self-referent performance beliefs may influence behavioral outcomes through motivational and affective processes. The mechanisms through which LTP influence individual success may involve these dual processes. Motivationally, LTP might influence both decision making and later engagement in achieving the subgoals (e.g., completing a

semester of college) needed to ultimately achieve the long-term goals (e.g., college graduation). People low on LTP may correspondingly hold a low expectancy for achieving long-term goals, so they may avoid such goals or lower their priorities for the relevant subgoals. If tasks associated with these subgoals are unavoidable, they may reduce their efforts and work passively. Affectively, LTP may enhance people's coping in the face of obstacles. People who have stronger beliefs may experience less anxiety, think more openly, and persist longer when faced with difficulties than people who are beset by self-doubt (Bandura, 1989).

The implications of these studies are that, first, measuring students' LTP can help educators better understand students and help explain why some students are not motivated in learning tasks that require enduring efforts although they may have equipped with all prerequisite knowledge and skills. Second, new educational interventions may consider LTP as one important factor to cultivate. Bailey, Duncan, Odgers, and Yu (2017) proposed that effective educational intervention must target skills, behaviors, or beliefs that can be changed and are crucial for achieving the desired outcomes. LTP is a malleable and fundamental belief that may yield lasting benefit for students, especially who seem to be low-achieving currently.

Limitations and Future Directions

We acknowledge the limitations of the current work. For example, we chose to compare LTP with well-established measures, but it is possible that other variables related to self-regulation might predict academic performance as well or better than LTP. We conceptualized LTP as a belief that focuses on nonspecific long-term goals. In the current research, we measured LTP in a domain-general way, but it is possible that context-specific LTP is more predictive for some context-specific behavioral outcomes. Future research could compare LTP with measures such as hope, self-regulation, and academic self-efficacy. Also, all the participants of these three studies were college students. This limits the generalization of the results and may not apply to people who did not attend college or older people who graduated from college. The relationships between LTP and K-12 academic performance or adults' career success need to be further explored in future research.

In addition, we did not test *how* LTP might influence academic performance. We proposed that it may influence people's evaluation of the costs and benefits of pursuing long-term goals and thus their decision making on whether or not to engage in such pursuits and their emotional reactions to them. LTP may also, as noted, influence people's sustained engagement in achieving subgoals needed to attain the desired long-term outcome, and coping strategies when faced with difficulties during the process. Future research that assesses potential achievement-related behaviors or emotions in the face of obstacles will be helpful to test these hypotheses. Longitudinal studies with LTP measured on multiple time points are needed to address this question.

Despite these limitations, LTP emerged as the most useful and valid noncognitive predictor of college performance included in this research, and contributed to the prediction of this performance above and beyond the influence of the other well-studied factors of prior GPA, family background, and cognitive ability.

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Supplemental Material

Supplementary material is available for this article online.

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